

WHAT IS CLAIMED IS:

1. An exposure apparatus for transferring a pattern on a master to a substrate via an optical system, comprising:

5 a first housing for surrounding an exposure position of the master;

a second housing for stocking the master; and

a third housing for transferring the master between inside and outside of said first housing,

10 wherein an interior of each housing is controlled to a predetermined atmosphere.

2. The apparatus according to claim 1, wherein the master transferred from the outside of said first housing via said third housing is stocked in said

15 second housing.

3. The apparatus according to claim 1, wherein said third housing includes a load-lock chamber, and

the apparatus further comprises first  
20 opening/closing means between the outside of said first housing and the load-lock chamber, and second opening/closing means between the load-lock chamber and the inside of said first housing.

4. The apparatus according to claim 3, wherein in  
25 transferring the master from the outside to inside of said first housing, said first opening/closing means is opened, the master is transferred from the outside of

said first housing to the load-lock chamber, said first opening/closing means is closed, the load-lock chamber is controlled to a predetermined atmosphere, said second opening/closing means is opened, and the master  
5 is transferred to the inside of said first housing.

5. The apparatus according to claim 1, wherein said second housing is arranged in said first housing.

6. The apparatus according to claim 1, wherein said second housing is arranged outside said first housing  
10 in tight contact with said first housing.

7. The apparatus according to claim 6, wherein said second housing comprises third opening/closing means between said first housing and said second housing.

8. The apparatus according to claim 1, wherein said  
15 second housing has a shelf-like structure and can stock a plurality of masters.

9. The apparatus according to claim 1, wherein an atmosphere in said first housing is detected, and controlled in accordance with a detection result.

20 10. The apparatus according to claim 1, wherein said first housing incorporates

alignment means for aligning the master,  
first transfer means for transferring the master between said third housing and said second housing and  
25 between said second housing and said alignment means, and

second transfer means for transferring the master

between said alignment means and the exposure position.

11. The apparatus according to claim 1, wherein said first housing has exposure beam transmission ports above and below the exposure position.

5 12. The apparatus according to claim 1, wherein the predetermined atmosphere includes an inert gas atmosphere.

13. The apparatus according to claim 12, wherein the atmosphere is controlled by a circulation system via  
10 cleaning means.

14. The apparatus according to claim 12, wherein inert gas for forming the predetermined atmosphere is supplied to the exposure position.

15 15. The apparatus according to claim 12, wherein inert gas for forming the predetermined atmosphere is supplied to a vicinity of said second housing in said first housing.

16. The apparatus according to claim 1, wherein the predetermined atmosphere includes vacuum.

20 17. The apparatus according to claim 1, wherein an exposure light source includes an F<sub>2</sub> excimer laser.

18. An exposure apparatus for transferring a pattern on a master to a substrate via an optical system, comprising:

25 a first housing for surrounding an exposure position of the master;

a second housing for stocking the master;

a third housing for transferring the master  
between inside and outside of said first housing;

a display;

a network interface; and

5 a computer for executing network software,

wherein an interior of each housing is controlled  
to a predetermined atmosphere, and maintenance  
information of the exposure apparatus is communicated  
via a computer network.

10 19. The apparatus according to claim 18, wherein the  
network software provides on said display a user  
interface for accessing a maintenance database provided  
by a vendor or user of the exposure apparatus and  
connected to an external network outside a factory in  
15 which the exposure apparatus is installed, and  
information is obtained from the database via the  
external network.

20 20. An exposure method of transferring a pattern on a  
master to a substrate via an optical system, comprising  
the steps of:

arranging a first housing for surrounding an  
exposure position of the master, a second housing for  
stocking the master before being transferred to the  
exposure position, and a third housing for transferring  
25 the master between inside and outside of the first  
housing; and

controlling an interior of each housing to a

predetermined atmosphere.

21. A semiconductor device manufacturing method comprising steps of:

installing, in a semiconductor manufacturing  
5 factory, manufacturing apparatuses for various processes including an exposure apparatus; and manufacturing a semiconductor device by a plurality of processes using the manufacturing apparatuses,

10 wherein the exposure apparatus has a first housing for surrounding an exposure position of a master, a second housing for stocking the master, and a third housing for transferring the master  
15 between inside and outside of the first housing, and an interior of each housing is controlled to a predetermined atmosphere.

22. The method according to claim 21, further comprising steps of:

20 connecting the manufacturing apparatuses via a local area network; and communicating information about at least one of the manufacturing apparatuses between the local area network and an external network outside the  
25 semiconductor manufacturing factory.

23. The method according to claim 22, wherein a database provided by a vendor or user of the exposure

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apparatus is accessed via the external network, thereby obtaining maintenance information of the exposure apparatus by data communication, or data communication is performed between the semiconductor manufacturing  
5 factory and another semiconductor manufacturing factory via the external network, thereby performing production management.

24. A semiconductor manufacturing factory comprising:  
manufacturing apparatuses for various processes

10 including an exposure apparatus;

a local area network for connecting said  
manufacturing apparatuses; and

a gateway for allowing access to an external  
network outside the factory from said local area

15 network,

wherein information about at least one of said  
manufacturing apparatuses can be communicated,

the exposure apparatus has

a first housing for surrounding an exposure  
20 position of a master,

a second housing for stocking the master, and

a third housing for transferring the master  
between inside and outside of the first housing, and

an interior of each housing is controlled to a  
25 predetermined atmosphere.

25. A maintenance method for an exposure apparatus  
installed in a semiconductor manufacturing factory,

comprising steps of:

making a vendor or user of the exposure apparatus  
provide a maintenance database connected to an external  
network outside the semiconductor manufacturing

5 factory;

allowing access to the maintenance database from  
the semiconductor manufacturing factory via the  
external network; and

transmitting maintenance information accumulated  
10 in the maintenance database to the semiconductor  
manufacturing factory via the external network,

wherein the exposure apparatus has  
a first housing for surrounding an exposure  
position of a master,

15 a second housing for stocking the master, and

a third housing for transferring the master  
between inside and outside of the first housing, and  
an interior of each housing is controlled to a  
predetermined atmosphere.

20 26. An exposure apparatus for exposing a substrate to  
a pattern of a mask, comprising:

a first housing for surrounding the mask when  
exposing; and

a second housing for stocking the mask, said  
25 housing being inside of said first housing,

wherein interiors of said first and second  
housing are filled by an inert gas or are adopted

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evacuation.

27. An exposure apparatus for exposing a substrate to a pattern of a mask, comprising:

5 a first housing for surrounding the mask when exposing; and

a second housing for stocking the mask, an interior of said second housing is allowed to communicate to an interior of said first housing means, and the interior of said first housing means is not  
10 allowed to communicate to an external,

wherein the interiors of said first and second housing are filled by an inert gas or are adopted evacuation.

28. A semiconductor device manufacturing method  
15 comprising steps of:

installing, in a semiconductor manufacturing factory, manufacturing apparatuses for various processes including an exposure apparatus for exposing a substrate to a pattern of a mask; and

20 manufacturing a semiconductor device by a plurality of processes using the manufacturing apparatuses,

wherein the exposure apparatus has

a first housing for surrounding the mask when  
25 exposing; and

a second housing for stocking the mask, said housing being inside of said first housing,



wherein interiors of said first and second housing are filled by an inert gas or are adopted evacuation.

29. A semiconductor device manufacturing method  
5 comprising steps of:

installing, in a semiconductor manufacturing factory, manufacturing apparatuses for various processes including an exposure apparatus for exposing a substrate to a pattern of a mask; and

10 manufacturing a semiconductor device by a plurality of processes using the manufacturing apparatuses,

wherein the exposure apparatus has

a first housing for surrounding the mask when  
15 exposing; and

a second housing for stocking the mask, an interior of said second housing is allowed to communicate to an interior of said first housing means, and the interior of said first housing means is not  
20 allowed to communicate to an external,  
wherein the interiors of said first and second housing are filled by an inert gas or are adopted evacuation.